	Type	L #	Hits	Search Text	DBs
1	BRS	L1	6044	refractive near8 index near8 (detector or sensor or monitor)	US-PGPUB; USPAT
2	BRS	L2	985	1 and (transparent or clear or glass) same (duct or wall or channel or microchannel or groove or cavity or conduit or space)	US-PGPUB; USPAT
3	BRS	L3	3	2 and critical near8 angle same incident same optical near8 (sensor or detector or monitor)	US-PGPUB; USPAT

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NEWS 4	OCT 30	CHEMLIST enhanced with new search and display field
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NEWS 10	DEC 01	CAS REGISTRY updated with new ambiguity codes
NEWS 11	DEC 11	CAS REGISTRY chemical nomenclature enhanced
NEWS 12	DEC 14	WPIDS/WPINDEX/WPIX manual codes updated
NEWS 13	DEC 14	GBFULL and FRFULL enhanced with IPC 8 features and functionality
NEWS 14	DEC 18	CA/CAplus pre-1967 chemical substance index entries enhanced with preparation role
NEWS 15	DEC 18	CA/CAplus patent kind codes updated
NEWS 16	DEC 18	MARPAT to CA/CAplus accession number crossover limit increased to 50,000
NEWS 17	DEC 18	MEDLINE updated in preparation for 2007 reload
NEWS 18	DEC 27	CA/CAplus enhanced with more pre-1907 records
NEWS 19	JAN 08	CHEMLIST enhanced with New Zealand Inventory of Chemicals
NEWS 20	JAN 16	CA/CAplus Company Name Thesaurus enhanced and reloaded
NEWS 21	JAN 16	IPC version 2007.01 thesaurus available on STN
NEWS 22	JAN 16	WPIDS/WPINDEX/WPIX enhanced with IPC 8 reclassification data

NEWS EXPRESS	NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.
NEWS HOURS	STN Operating Hours Plus Help Desk Availability
NEWS LOGIN	Welcome Banner and News Items
NEWS IPC8	For general information regarding STN implementation of IPC 8
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=> s refractive (8w) index (8w) (sens? or detect? or measur? or monitor?)
   2 FILES SEARCHED...
L1        20291 REFRACTIVE (8W) INDEX (8W) (SENS? OR DETECT? OR MEASUR? OR MONIT
                OR?)

=> s l1 and surface (8w) plasmon (8w) resonance
L2          639 L1 AND SURFACE (8W) PLASMON (8W) RESONANCE

=> s l2 and optic? (8w) (sens? or detect? or measur? or monitor?)
   2 FILES SEARCHED...
L3          407 L2 AND OPTIC? (8W) (SENS? OR DETECT? OR MEASUR? OR MONITOR?)

=> s l3 and (channel or microchannel or well or cavity or duct or groove or
conduit) (s) (reflect? or mirror)
   2 FILES SEARCHED...
L4           11 L3 AND (CHANNEL OR MICROCHANNEL OR WELL OR CAVITY OR DUCT OR
                GROOVE OR CONDUIT) (S) (REFLECT? OR MIRROR)

=> s l4 and critical (8w) angle (p) incident
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'ANGLE (P) INCIDENT'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'ANGLE (P) INCIDENT'
L5            1 L4 AND CRITICAL (8W) ANGLE (P) INCIDENT

=> s l1 and critical (8w) angle (p) incident
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'ANGLE (P) INCIDENT'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'ANGLE (P) INCIDENT'
L6           33 L1 AND CRITICAL (8W) ANGLE (P) INCIDENT

=> display l4 1-11 ibib abs

L4   ANSWER 1 OF 11  COMPENDEX  COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER:          2001(34):1089  COMPENDEX
TITLE:                     Nanofabricated refractive index
                           sensor based on photon tunneling in
                           nanofluidic channel.
AUTHOR:                    Kameoka, J. (Sch. of Applied/Engineering Physics
                           Cornell University, Ithaca, NY 14853, United States);
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Craighead, H.G.
SOURCE: Sensors and Actuators, B: Chemical v 77 n 3 Jul 10 2001 2001.p 632-637
SOURCE: Sensors and Actuators, B: Chemical v 77 n 3 Jul 10 2001 2001.p 632-637
CODEN: SABCEB ISSN: 0925-4005
PUBLICATION YEAR: 2001
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 2001(34):1089 COMPENDEX
AB We have fabricated and tested a refractive index sensor based on photon tunneling in a nanofluidic system. The device comprises an extremely thin fluid chamber formed between two optically transparent layers. It can be used to detect changes in refractive index due to chemical composition changes of a fluid in the small test volume. Because the physical property measured is a refractive index change, no staining or labeling is required. We tested the device with five samples, water and water with 1% ethanol, 2% ethanol, 5% ethanol and 10% ethanol. The sensing was done by measuring the intensity of a reflected laser beam incident on the sensing element at around the critical angle. The measured response agrees well with the calculated reflectance. $CPY 2001 Elsevier Science B.V. 11 Refs.

L4 ANSWER 2 OF 11 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 2000(4):3455 COMPENDEX
TITLE: Chemical sensors for the detection of organic pollutants.
AUTHOR: Hassan, Aseel K. (Sheffield Hallam Univ, Sheffield, Engl); Molina, Maria V.; Ray, Asim; Nabok, Alexei; Ghassemlooy, Zabih; Yates, Rob; Saatchi, Reza
MEETING TITLE: Proceedings of the 1999 Smart Structures and Materials - Smart Electronics and MEMS.
MEETING ORGANIZER: SPIE
MEETING LOCATION: Newport Beach, CA, USA
MEETING DATE: 01 Mar 1999-03 Mar 1999
SOURCE: Proceedings of SPIE - The International Society for Optical Engineering v 3673 1999.p 318-326
SOURCE: Proceedings of SPIE - The International Society for Optical Engineering v 3673 1999.p 318-326
CODEN: PSISDG ISSN: 0277-786X
PUBLICATION YEAR: 1999
MEETING NUMBER: 55677
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 2000(4):3455 COMPENDEX
AB Detection of toxic organic vapours, has been demonstrated, using surface plasmon resonance (SPR) as a potentially inexpensive optical technique. This provides the basis for a viable sensor technology with application in the field of detection of different organic solvents present in the atmosphere in gaseous phase, as a mixture.Calixarene derivatives have been used as the sensing membranes which were deposited as thin films onto Au-coated substrates by the method of spin coating. SPR measurements have been utilised for the detection of benzene, toluene, ethylbenzene and m-xylene, with concentration in the range 5-375 ppm. Surface plasmon resonance has also been exploited for the determination of the thickness and refractive index of the calixarene spun films. Vapour detection has been realised by the shift of the whole SPR curve under the dynamic state of adsorption as well as by measuring SPR reflectivity signal at a fixed angle of incidence. Selective, fast and reversible adsorption of the

vapour molecules has been observed. The increase of both film thickness and refractive index of spun films during adsorption are found to correspond to the calixarenes behaviour and may be explained by capturing of guest molecules in the film matrix, followed by their condensation. A model of the vapour registration system has been established and we also report in this paper on the extent of the selectivity, thus leading to the establishment of a sensor array.(Author abstract) 13 Refs.

L4 ANSWER 3 OF 11 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2006:9130262 INSPEC
TITLE: Deep-probe biosensing using peak-type metal-clad waveguides
AUTHOR: Skivesen, N.; Horvath, R.; Pedersen, H.C. (Opt. & Plasma Res. Dept., Riso Nat. Lab., Roskilde, Denmark)
SOURCE: 2005 Conference on Lasers and Electro-Optics Europe (IEEE Cat. No. 05TH8795), 2005, p. 635 of xxxii+722 pp., 1 refs.
ISBN: 0 7803 8974 3
Price: 0 7803 8974 3/2005/$20.00
Published by: IEEE, Piscataway, NJ, USA
Conference: 2005 Conference on Lasers and Electro-Optics Europe, Munich, Germany, 12-17 June 2005
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Experimental; Practical
COUNTRY: United States
LANGUAGE: English
AN 2006:9130262 INSPEC
AB A typical optical waveguide sensor is based upon monitoring the resonance angle at which light is coupled into the waveguide. Hence, the in-coupled light intensity versus illumination angle gives rise to a peak-type sensorgram. As opposed to this, the metal-clad waveguide is used in reflection mode, just as the well-known surface-plasmon resonance biosensor. Thus, metal-clad waveguide sensors facilitates two different operation modes depending on the metal used, dip-type and peak-type operation which are optimal for different sensing purposes such as refractive index measurements, detection of micron-scale objects or to measure thin adlayers on the sensor surface

L4 ANSWER 4 OF 11 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2006:8699409 INSPEC
TITLE: Analysis of calibration methodologies for solvent effects in drug discovery studies using evanescent wave biosensors
AUTHOR: Karp, N.A.; Edwards, P.R.; Leatherbarrow, R.J. (Affinity Sensors, Cambridge, UK)
SOURCE: Biosensors & Bioelectronics (15 July 2005), vol.21, no.1, p. 128-34, 9 refs.
CODEN: BBIOE4, ISSN: 0956-5663
SICI: 0956-5663(20050715)21:1L.128:ACMS;1-3
Doc.No.: S0956-5663(04)00394-X
Published by: Elsevier, UK
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: United Kingdom
LANGUAGE: English
AN 2006:8699409 INSPEC
AB Recent improvements in sensitivity have enabled direct binding studies of small molecules with evanescent wave biosensors, which monitor binding by measuring refractive index changes close to the sensing surface. The universal solvent for small molecules, dimethylsulfoxide has a high refractive index; consequently, on ligate

addition a large non-specific solvent effect is seen which can mask the specific signal. It has been previously noted that different sensor surfaces can respond differently to the same buffer change. The difference is proposed to arise from differences in buffer space and contraction and swelling of the surface hydrogel. Within this paper, a number of calibration approaches are investigated and tested using warfarin binding to human serum albumin as a model system. A number of recommendations are made for accurate referencing for non-specific effects. Changes to the ionic strength of the running buffer had little effect, whilst changes to the charge density of the carboxylmethyl dextran significantly affected how well the control surface reflects the non-specific signal. An amended 'calibration method' can be used, however, it is an additional complex step that was found to overcorrect in the presence of non-specific binding. Matching immobilisation levels between control and active surface significantly reduces solvent differences allowing accurate correction providing solvent compositional changes are minimised in experimental design. Under these circumstances, the traditional method of simple subtraction of the control from the active response is the most appropriate method of correction.

L4 ANSWER 5 OF 11 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2002:7457733 INSPEC
DOCUMENT NUMBER: A2003-01-8780B-004; B2003-01-7230J-003
TITLE: Multichannel optical biosensors for label-free high-throughput screening
AUTHOR: Nikitin, P.; Goshkov, B.; Valeiko, M.V.; Nikitin, S. (Gen. Phys. Inst., Acad. of Sci., Moscow, Russia)
SOURCE: Proceedings of the SPIE - The International Society for Optical Engineering (2002), vol.4578, p. 126-35, 13 refs.
CODEN: PSISDG, ISSN: 0277-786X
SICI: 0277-786X(2002)4578L.126:MOBL;1-L
Price: 0277-786X/02/$15.00
Published by: SPIE-Int. Soc. Opt. Eng, USA
Conference: Fiber Optic Sensor Technology and Applications 2001, Newton, MA, USA, 30 Oct.-1 Nov. 2001
Sponsor(s): SPIE
DOCUMENT TYPE: Conference; Conference Article; Journal
TREATMENT CODE: Experimental
COUNTRY: United States
LANGUAGE: English
AN 2002:7457733 INSPEC DN A2003-01-8780B-004; B2003-01-7230J-003
AB An optical method has been proposed and successfully tested for direct detection of biochemical reactions on a surface, which is insensitive to variations of the radiation intensity and refractive index of a solution. The method is based on detection of the spectrum of the reflected or transmitted radiation modulated by the interference in a sensitive layer of large thickness (several tens and hundreds of microns), which can be a microscope cover glass with a deposited receptor layer. A change in the phase of the interference pattern in this spectrum is used as an information signal about a change in the thickness of the sensitive layer caused by a biochemical reaction. Single-and multichannel (up to 96 channels) devices have been designed to study reactions of binding and detachment of proteins in real time. The root-mean-square noise of the prototypes expressed in the layer thickness was 3 pm

L4 ANSWER 6 OF 11 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2002:7247505 INSPEC
DOCUMENT NUMBER: A2002-11-8280T-007; B2002-06-7230L-002
TITLE: Selective optical detection of aromatic vapors

AUTHOR: Podgorsek, R.P.; (Dept. of Phys., Duisburg Univ., Germany), Franke, H.
SOURCE: Applied Optics (1 Feb. 2002), vol.41, no.4, p. 601-8, 15 refs.
CODEN: APOPAI, ISSN: 0003-6935
SICI: 0003-6935(20020201)41:4L.601:SODA;1-N
Price: 0003-6935/02/040601-08$15.00/0
Published by: Opt. Soc. America, USA
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2002:7247505 INSPEC DN A2002-11-8280T-007; B2002-06-7230L-002
AB A sensitive layer system of amorphous Teflon AF on silver has been coated on a glass substrate. With a monochromatic light source the reflectivity of the layer system as a function of the angle of incidence exhibits the surface-plasmon resonance as well as a set of leaky-mode resonances. These optical resonance phenomena are sensitive to small refractive-index changes that may be induced by diffusion of particles into the Teflon AF layer. On the basis of this effect, the aromatic vapors benzene; toluene; and o-, p-, and m-xylene have been investigated with different vapor concentrations. By selection of a distinct angle at a particular resonance, dynamic measurements can be performed. Assuming a diffusion process in accordance with Fick's law, the diffusion profile can be calculated as a function of time. As described by the Lorentz-Lorenz relation a refractive-index profile is induced that consequently interacts with the electromagnetic fields of the optical modes. With the function of the diffusion-induced refractive-index profile the shift of the resonance lines can be calculated from the measured reflectivity change as a function of time. The characteristic diffusion coefficients of the particular vapor allow for a distinction between the different types of aromate, even between the different xylenes

L4 ANSWER 7 OF 11 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2000:6679505 INSPEC
DOCUMENT NUMBER: A2000-19-4281P-045
TITLE: Fibre optic microsensor for refractive index and salinity based on SPR for aquatic environments
AUTHOR: Grunwald, B.; Holst, G. (Max-Planck-Inst. for Marine Microbiol., Bremen, Germany)
SOURCE: Proceedings of the SPIE - The International Society for Optical Engineering (1999), vol.3860, p. 472-9, 17 refs.
CODEN: PSISDG, ISSN: 0277-786X
SICI: 0277-786X(1999)3860L.472:FOMR;1-U
Price: 0277-786X/99/$10.00
Published by: SPIE-Int. Soc. Opt. Eng, USA
Conference: Fiber Optic Sensor Technology and Applications, Boston, MA, USA, 20-22 Sept. 1999
Sponsor(s): SPIE
DOCUMENT TYPE: Conference; Conference Article; Journal
TREATMENT CODE: Experimental
COUNTRY: United States
LANGUAGE: English
AN 2000:6679505 INSPEC DN A2000-19-4281P-045
AB A new refractive index microsensor based on surface plasmon resonance (SPR) for fine scale measurements in aquatic environments is presented. The local light conditions in marine sediments determine the activity of photosynthetic organisms. The light field can be investigated by scalar irradiance microprobes at a spatial resolution better than 100 μm but the refraction index still has to be assumed constant or measured by techniques with lower spatial resolution.

It is well known from other microsensor measurements that the microenvironment strongly determines the metabolism of the organisms. Therefore we developed the new sensor to access the fine scale distribution of refraction index. A second parameter of interest is the salinity which can be assumed not to be constant in some biofilms. As the salinity is usually measured with a refractometer, we checked if we could measure salinity independent of the ambient optical conditions in the sediment with the new microsensor. The microsensor is formed by a multimode silica fibre where the plastic jacket and fibre cladding has been removed. The tip is then tapered and a gold layer is deposited. Due to the tapered geometry the diameter is decreased to achieve a higher spatial resolution for profiling applications. SPR is excited at the fibre tip by coupling polychromatic light into the fibre. The reflected light is measured with a spectrometer. A refractive index change of the fibre tips surrounding area causes a wavelength shift of the spectral intensity distribution. The effects of different tip geometries have been characterized and results are presented. An appropriate measuring system is proposed

L4 ANSWER 8 OF 11 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2000:6672801 INSPEC
DOCUMENT NUMBER: A2000-18-8780B-021; B2000-09-7230J-018
TITLE: Novel approach to multichannel SPR sensing
AUTHOR: Homola, J.; (Dept. of Electr. Eng., Washington Univ., Seattle, WA, USA), Lu, H.B.; Nenninger, G.G.; Yee, S.S.; Campbell, C.T.
SOURCE: Proceedings of the SPIE - The International Society for Optical Engineering (1999), vol.3857, p. 198-206, 17 refs.
CODEN: PSISDG, ISSN: 0277-786X
SICI: 0277-786X(1999)3857L.198:NAMS;1-4
Price: 0277-786X/99/$10.00
Published by: SPIE-Int. Soc. Opt. Eng, USA
Conference: Chemical Microsensors and Applications II, Boston, MA, USA, 19-20 Sept. 1999
Sponsor(s): SPIE
DOCUMENT TYPE: Conference; Conference Article; Journal
TREATMENT CODE: Experimental
COUNTRY: United States
LANGUAGE: English
AN 2000:6672801 INSPEC DN A2000-18-8780B-021; B2000-09-7230J-018
AB A novel approach to multichannel SPR sensing based on encoding information from separate sensing channels into a single optical spectrum is presented. A dual channel SPR sensor using this approach is demonstrated. Attention is given to exploitation of the dual-channel SPR sensor for compensation for background interference and non-specific adsorption of the biomolecules to the surface of the SPR biosensor. Experimental results indicate that background refractive index changes were compensated with accuracy better than 8+10-5 RIU (refractive index unit); the effect of a temperature change of 3.6 K was reduced by a factor of 13 by the dual-channel sensor. SPR biosensor-based detection of monoclonal anti-dinitrophenyl antibody with compensation for non-specific adsorption is demonstrated

L4 ANSWER 9 OF 11 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1999:6159418 INSPEC
DOCUMENT NUMBER: A1999-06-0760-001; B1999-03-7230-038
TITLE: Novel polarization control scheme for spectral surface plasmon resonance sensors
AUTHOR: Homola, J.; Yee, S.S. (Dept. of Electr. Eng., Washington Univ., Seattle, WA, USA)
SOURCE: Sensors and Actuators B (Chemical) (31 Aug. 1998), vol.B51, no.1-3, p. 331-9, 15 refs.

CODEN: SABCEB, ISSN: 0925-4005
SICI: 0925-4005(19980831)B51:1/3L.331:NPCS;1-J
Price: 0925-4005/98/$19.00
Doc.No.: S0925-4005(98)00208-1
Published by: Elsevier, Switzerland
Conference: 4th European Conference on Optical Chemical Sensors and Biosensors. EUROPT(RT)ODE IV, Munster, Germany, 29 March-1 April 1998
DOCUMENT TYPE: Conference; Conference Article; Journal
TREATMENT CODE: Theoretical; Experimental
COUNTRY: Switzerland
LANGUAGE: English
AN 1999:6159418 INSPEC DN A1999-06-0760-001; B1999-03-7230-038
AB An analysis of polarization phenomena occurring at surface plasmon resonance is carried out. Based on the results of the analysis, a novel polarization control scheme for spectral surface plasmon resonance (SPR) sensors based on attenuated total reflection method is proposed which allows observing SPR as a peak in the spectrum of the reflected light. The implementation of this polarization control scheme leads to an SPR sensor based on the measurement of the wavelength at which the light intensity maximum occurs which may be more easy to monitor than the position of an SPR dip. This polarization control scheme is of particular interest for the development of multichannel spectral SPR sensors in which mutually spectrally shifted sensing channels are simultaneously monitored by a spectrum analyzer

L4 ANSWER 10 OF 11 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1998:6093644 INSPEC
DOCUMENT NUMBER: A1999-01-4281P-007; B1999-01-7230E-007
TITLE: Surface plasmon resonance on a single mode optical fiber
AUTHOR: Fontana, E.; (Dept. de Electron. e Sistema, Univ. Fed. de Pernambuco, Recife, Brazil), Dulman, H.D.; Doggett, D.E.; Pantell, R.H.
SOURCE: IEEE Transactions on Instrumentation and Measurement (Feb. 1998), vol.47, no.1, p. 168-73, 9 refs.
CODEN: IEIMAO, ISSN: 0018-9456
SICI: 0018-9456(199802)47:1L.168:SPRS;1-I
Price: 0018-9456/98/$10.00
Doc.No.: S0018-9456(98)05461-8
Published by: IEEE, USA
Conference: IEEE Instrumentation and Measurement Technology Conference Sensing, Processing, Networking. IMTC Proceedings, Ottawa, Ont., Canada, 19-21 May 1997
Sponsor(s): IEEE Instrum. & Meas. Soc.; IEEE Ottawa Sect
DOCUMENT TYPE: Conference; Conference Article; Journal
TREATMENT CODE: Application; Theoretical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 1998:6093644 INSPEC DN A1999-01-4281P-007; B1999-01-7230E-007
AB A single mode optical fiber probe employing surface plasmon resonance (SPR) as the transducing mechanism is described. The fiber has one end polished at an angle relative to the longitudinal axis and coated with a thin gold film. Diffraction of the guided mode out of the fiber core, after interaction with the metallized fiber tip, enables visual observation of a spatial SPR, the latter arising as a dark strip within the light distribution of the diffracted beam pattern. Modifications induced on the SPR due to variations in material properties of the gaseous environment next to the fiber probe indicated a detection sensitivity for changes in refractive index down to 10-5. A theoretical model that accounts for the observed diffracted light under SPR as well as the spectral dependence of light

reflected back to the fiber input, allows obtaining design parameters for the construction of highly sensitive fiber probes for use in gas sensing applications

L4 ANSWER 11 OF 11 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1997:5684227 INSPEC
DOCUMENT NUMBER: A1997-19-4281P-033; B1997-10-7230E-041
TITLE: Surface plasmon resonance on a single mode fiber
AUTHOR: Fontana, E.; (Dept. of Electron. & Syst., Fed. Univ. of Pernambuco, Recife, Brazil), Dulman, H.D.; Doggett, D.E.; Pantell, R.H.
SOURCE: IEEE Instrumentation and Measurement Technology Conference. Sensing, Processing, Networking. IMTC Proceedings (Cat. No.97CH36022), vol.1, 1997, p. 611-16 vol.1 of 2 vol. xxxiv+1512 pp., 9 refs.
ISBN: 0 7803 3747 6
Price: 0 7803 3747 6/97/$10.00
Published by: IEEE, New York, NY, USA
Conference: IEEE Instrumentation and Measurement Technology Conference Sensing, Processing, Networking. IMTC Proceedings, Ottawa, Ont., Canada, 19-21 May 1997
Sponsor(s): IEEE Instrum. & Meas. Soc.; IEEE Ottawa Sect
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Application; Practical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 1997:5684227 INSPEC DN A1997-19-4281P-033; B1997-10-7230E-041
AB A single mode optical fiber probe employing surface plasmon resonance (SPR) as the transducing mechanism is described. The fiber has one end polished at an angle relative to the longitudinal axis and coated with a thin gold film. Diffraction of the guided mode out of the fiber core, after interaction with the metallized fiber tip enables visual observation of a spatial SPR, the latter arising as a dark strip within the light distribution of the diffracted beam pattern. Modifications induced on the SPR due to variations in material properties of the gaseous environment next to the fiber probe indicated a detection sensitivity for changes in refractive index down to 10-5. A theoretical model that accounts for the observed diffracted light under SPR as well as the spectral dependence of light reflected back to the fiber input, allows obtaining design parameters for the construction of highly sensitive fiber probes for use in gas sensing applications

=> display l6 1-33 ibib abs

L6 ANSWER 1 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:530267 CAPLUS
DOCUMENT NUMBER: 143:405316
TITLE: Refractive index measurement using total internal reflection
AUTHOR(S): Van Keuren, Edward Richard
CORPORATE SOURCE: Department of Physics, Washington, Georgetown University, DC, 20057, USA
SOURCE: American Journal of Physics (2005), 73(7), 611-614
CODEN: AJPIAS; ISSN: 0002-9505
PUBLISHER: American Association of Physics Teachers
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An undergraduate level experiment is presented for demonstrating total internal reflection. The experiment yields a relatively precise value of the refractive index of a prism to be found from a

measurement of the incident angle at which total internal reflection occurs. Analytic expressions are obtained for the refractive index as a function of the incident angle for both equilateral and right angle prisms. Students can observe not only the crit. angle at which total internal reflection occurs, but measure and analyze the significant rise in reflected beam power. The addition of a small fluid reservoir attached to the side of the prism enables the determination of a liquid refractive index.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 2 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:913287 CAPLUS

DOCUMENT NUMBER: 142:81454

TITLE: Subnanometric measurements of evanescent wave penetration depth using total internal reflection microscopy combined with fluorescent correlation spectroscopy

AUTHOR(S): Harlepp, S.; Robert, J.; Darnton, N. C.; Chatenay, D.

CORPORATE SOURCE: Laboratoire de Dynamique des Fluides Complexes, CNRS-ULP, Strasbourg, 67000, Fr.

SOURCE: Applied Physics Letters (2004), 85(17), 3917-3919
CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB In total internal reflection microscopy (TIRM), quant. interpretation of results often requires a precise knowledge of the penetration depth of the evanescent wave. Standard TIRM practice is to calculate this depth from the microscope's geometry, but this can introduce significant errors. To calibrate the penetration depth of an evanescent wave in TIRM. An evanescent wave was obtained by illuminating a surface at an incident angle greater than the crit. angle. Its penetration depth generally depends on the wavelength and the incident angle of the illumination, and on the indexes of refraction on either side of the reflecting surface, but cannot be larger than the field of view. By introducing a fluorescent species (such as fluorescein) and measuring its diffusion time, it is possible to measure very precisely the penetration depth of the evanescent wave.

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:483467 CAPLUS

DOCUMENT NUMBER: 135:220321

TITLE: Nanofabricated refractive index sensor based on photon tunneling in nanofluidic channel

AUTHOR(S): Kameoka, J.; Craighead, H. G.

CORPORATE SOURCE: School of Applied and Engineering Physics, Cornell University, Ithaca, NY, 14853, USA

SOURCE: Sensors and Actuators, B: Chemical (2001), B77(3), 632-637
CODEN: SABCEB; ISSN: 0925-4005

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The authors have fabricated and tested a refractive index sensor based on photon tunneling in a nanofluidic system. The device comprises an extremely thin fluid chamber formed between two optically transparent layers. It can be used to detect changes in refractive index due to chemical composition changes of a fluid in the small test volume Because the phys. property measured is a refractive index

change, no staining or labeling is required. The authors tested the device with five samples, water and water with 1% ethanol, 2% ethanol, 5% ethanol and 10% ethanol. The sensing was done by measuring the intensity of a reflected laser beam incident on the sensing element at around the crit. angle. The measured response agrees well with the calculated reflectance.

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 4 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2001:225408 CAPLUS
DOCUMENT NUMBER: 134:259027
TITLE: Index of refraction measuring method of solution using optical fiber
INVENTOR(S): Ishizuki, Hideaki
PATENT ASSIGNEE(S): Sato, Masaki, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001083084	A	20010330	JP 1999-295712	19990910
PRIORITY APPLN. INFO.:			JP 1999-295712	19990910

AB The method comprises the steps of: immersing an optical fiber without the cladding into the solution; irradiating a laser beam into the fiber; and measuring the transmitted light intensity, thereby obtaining the crit. incident beam angle and the n of the solution

L6 ANSWER 5 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2000:524028 CAPLUS
TITLE: Critical angle sensor
INVENTOR(S): Melendez, Jose L.; Carr, Richard A.; Bartholomew, Dwight U.
PATENT ASSIGNEE(S): Texas Instruments Incorporated, USA
SOURCE: U.S., 9 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6097479	A	20000801	US 1997-942159	19971001
PRIORITY APPLN. INFO.:			US 1997-942159	19971001

AB Disclosed is an integrated miniaturized biochemical sensor (50) which can be used to make critical angle measurements resulting from the differences in refractive index between the sensor's housing (55) and a given sample (40). In one embodiment, the sensor includes a device platform (111) over which an encapsulating and light transmissive housing (115) is formed to enclose the various sensor components including a light source (105), and a photodetector (107), a signal processing unit (95) and a temperature sensor (95). In another embodiment the housing (115) has a reflective mirrored surface (119) which focuses the light (117) from the light source (105) onto a sensing surface (121) which is in interact with the sample (40) of interest. Light incident from the sensing surface (121) is directed at the photodetector (107,159) which may be an array or single cell. A temperature sensor (95) may also be included and coupled to the

platform (111).
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 6 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1995:546153 CAPLUS
DOCUMENT NUMBER: 122:325065
TITLE: Modified critical angle method for measuring the refractive index of bio-optical materials and its application to bacteriorhodopsin
AUTHOR(S): Song, Q. Wang; Ku, Chin-Yu; Zhang, Chunping; Gross, Richard B.; Birge, Robert R.; Michalak, Richard
CORPORATE SOURCE: W. M. Keck Center Molecular Electronics, Syracuse Univ., Syracuse, NY, 13244-1240, USA
SOURCE: Journal of the Optical Society of America B: Optical Physics (1995), 12(5), 797-803
CODEN: JOBPDE; ISSN: 0740-3224
PUBLISHER: Optical Society of America
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The crit. angle technique is modified for the accurate measurement of the refractive index of bio-optical materials. Based on the anal. of reflection from the boundary of the material as a function of incident angle and polarization direction, the crit. illumination angle was obtained by numerical differentiation of the reflection curve. As an example, the dispersion curve of bacteriorhodopsin is given. The measurement error and the effect of the host bovine skin gelatin on the results are analyzed.

L6 ANSWER 7 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1995:543263 CAPLUS
DOCUMENT NUMBER: 123:159738
TITLE: Refractive index measurement of absorbing and turbid fluids by reflection near the critical angle
AUTHOR(S): Meeten, G. H.; North, A. N.
CORPORATE SOURCE: Schlumberger Cambridge Research, Cambridge, CB3 0EL, UK
SOURCE: Measurement Science & Technology (1995), 6(2), 214-21
CODEN: MSTCEP; ISSN: 0957-0233
PUBLISHER: Institute of Physics Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A method is described for measuring the specular optical reflectance $R(\phi)$ of the interface between a fluid and a glass prism, the incident and reflected light being in the glass, and the angle of incidence ϕ being varied about the crit. angle. Transparent, absorbing and some turbid fluids give $R(\phi)$ close to theor. predictions, and exptl. reflectance data are analyzed to give the real (n') and imaginary (n'') refractive indexes of the fluid. Other turbid fluids gave $R(\phi)$ data that differed strongly from theor. expectation. This is attributed to heterogeneity of the fluid on the optical wavelength scale, and problems of refractometry for such fluids are discussed.

L6 ANSWER 8 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1995:344880 CAPLUS
DOCUMENT NUMBER: 122:173745
TITLE: Highly sensitive optical measurement techniques based on acousto-optic devices
AUTHOR(S): Gass, P. A.; Schalk, S.; Sambles, J. R.
CORPORATE SOURCE: Department of Physics, University of Exeter, Exeter/Devon, EX4 4QL, UK
SOURCE: Applied Optics (1994), 33(31), 7501-10

CODEN: APOPAI; ISSN: 0003-6935
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An optical measurement technique is presented that permits a direct measurement of the differential transmission or reflectivity of a sample. The technique is based on the use of a photoacoustic device to modulate rapidly the incident angle or wavelength of the probe beam. Detection of the resulting modulated signal by a lock-in amplifier gives a direct measure of the differential optical properties of the sample. This direct measurement of the differential can strongly enhance normally undetectable optical features, such as weakly coupled, Otto geometry surface plasmon polaritons. A development of the technique, which uses the optical analog of a phase-locked loop, has an angular resolution of 6 + 10-6°. This permits the detection of the shift in the crit. angle caused by a change of 10-6 in the refractive index of a gas mixture

L6 ANSWER 9 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1995:142806 CAPLUS
DOCUMENT NUMBER: 122:67817
TITLE: Optical sensor based on total internal reflection diffraction grating
AUTHOR(S): Sainov, S.
CORPORATE SOURCE: Central Laboratory of Optical Storage and Processing of Information, Bulgarian Academy of Sciences, PO Box 95, Sofia, 1113, Bulg.
SOURCE: Sensors and Actuators, A: Physical (1994), A45(1), 1-6
CODEN: SAAPEB; ISSN: 0924-4247
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The possibility of using a metal diffraction grating, working in total internal reflection, as an optical sensor is shown. Using the elementary theory of such gratings, the inverse problem is solved in Fraunhofer's approximation and the refractive-index change as a function of the diffraction-efficiency change is determined for small changes of the relative refractive index. The sensitivity of the total internal reflection diffraction grating sensor is much higher for the 1st diffraction order, provided that the two diffracted beams satisfy the condition for total internal reflection at the prism-studied medium interface. In gratings with large periods and crit. angles of the order of 65° (quartz-H2O interface), a change in the refractive index of 5 + 10-5 can be detected if the diffraction efficiency is measured with an accuracy of ±1%. Exptl., a refractive-index change of 3 + 10-4 was measured and in the vicinity of the crit. angle , there is a satisfactory agreement between the exptl. results and the elementary theory for s-polarization of the incident wave.

L6 ANSWER 10 OF 33 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1961:141360 CAPLUS
DOCUMENT NUMBER: 55:141360
ORIGINAL REFERENCE NO.: 55:26663c-e
TITLE: Attenuated total reflection. A new principle for the production of useful infrared reflection spectra of organic compounds
AUTHOR(S): Fahrenfort, J.
CORPORATE SOURCE: Koninklijke/Shell Lab., Amsterdam
SOURCE: Spectrochimica Acta (1961), 17, 698-709
CODEN: SPACA5; ISSN: 0038-6987
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The interference between a dielec. of high n and the sample is taken as the reflecting surface. Incident radiation from the dielec. on

the interface is totally reflected at an angle greater than the crit. angle if the 2nd medium does not absorb. If absorption occurs, the reflection is no longer total, and a reflection spectrum of high contrast and intensity is obtained. After suitable calibration, these spectra, similar to transmission spectra, can be used for quant. results. Graphical or theoretical relations can also be used to get the n and absorption indexes of the sample. The exptl. reflection apparatus is described. Crystals of TlBr + TlI (KRS-5) or AgCl were used to study dibutylphthalate, a solid epoxy resin, and decene-1 in Nujol. The results are compared with the corresponding transmission spectra.

L6 ANSWER 11 OF 33 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 2001(34):1089 COMPENDEX
TITLE: Nanofabricated refractive index sensor based on photon tunneling in nanofluidic channel.
AUTHOR: Kameoka, J. (Sch. of Applied/Engineering Physics Cornell University, Ithaca, NY 14853, United States); Craighead, H.G.
SOURCE: Sensors and Actuators, B: Chemical v 77 n 3 Jul 10 2001 2001.p 632-637
SOURCE: Sensors and Actuators, B: Chemical v 77 n 3 Jul 10 2001 2001.p 632-637
CODEN: SABCEB ISSN: 0925-4005
PUBLICATION YEAR: 2001
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 2001(34):1089 COMPENDEX
AB We have fabricated and tested a refractive index sensor based on photon tunneling in a nanofluidic system. The device comprises an extremely thin fluid chamber formed between two optically transparent layers. It can be used to detect changes in refractive index due to chemical composition changes of a fluid in the small test volume. Because the physical property measured is a refractive index change, no staining or labeling is required. We tested the device with five samples, water and water with 1% ethanol, 2% ethanol, 5% ethanol and 10% ethanol. The sensing was done by measuring the intensity of a reflected laser beam incident on the sensing element at around the critical angle. The measured response agrees well with the calculated reflectance. $CPY 2001 Elsevier Science B.V. 11 Refs.

L6 ANSWER 12 OF 33 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 1999(15):3681 COMPENDEX
TITLE: Measurement and accuracy analysis of refractive index using a specular reflectivity close to the total internal reflection.
AUTHOR: Li, Hui (Zhejiang Univ, Zhejiang, China); Lu, Zukang; Xie, Shusen; Lin, Lei
MEETING TITLE: Proceedings of the 1998 Conference on Automated Optical Inspection for Industry: Theory, Technology, and Applications II.
MEETING ORGANIZER: SPIE
MEETING LOCATION: Beijing, China
MEETING DATE: 16 Sep 1998-19 Sep 1998
SOURCE: Proceedings of SPIE - The International Society for Optical Engineering v 3558 1998.SPIE, Bellingham, WA, USA.p 491-497
SOURCE: Proceedings of SPIE - The International Society for Optical Engineering v 3558 1998.SPIE, Bellingham, WA, USA.p 491-497
CODEN: PSISDG ISSN: 0277-786X
PUBLICATION YEAR: 1998
MEETING NUMBER: 49779

DOCUMENT TYPE: Conference Article
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 1999(15):3681 COMPENDEX
AB A new method to measure refractive index and the accuracy analysis as well is presented.The characteristic includes that the direction of incident light is not perpendicular to the interface but close to the critical angle of total internal reflection.That the specular reflectivity changes sharply near the critical angle implies that a high measuring sensitivity be reached easily.A narrow p-polarized laser beam and a prism or a quasi-semi-cylindrical lens in contact with a sample are applied in the apparatus.In order to match a high accuracy, an photoelectronic receiver with dual-channel divider is designed to compensate the stability of output of laser.One of the advantages of the method is its high accuracy.The uncertainty in the refractive index measurement is in the fourth decimal place at least.The exact direction of incident laser beam depends on the accuracy of result expected.Another outstanding advantage is its particularly straightforward in use experimental techniques.The method will be the most promising tool to study the response of refractive index to subtle changes of different conditions.(Author abstract) 3 Refs.

L6 ANSWER 13 OF 33 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 1995(20):1114 COMPENDEX
TITLE: Refractive index measurement of absorbing and turbid fluids by reflection near the critical angle
AUTHOR: Meeten, G.H. (Schlumberger Cambridge Research, Cambridge, Engl); North, A.N.
SOURCE: Measurement Science & Technology v 6 n 2 Feb 1995.p 214-221
SOURCE: Measurement Science & Technology v 6 n 2 Feb 1995.p 214-221
CODEN: MSTCEP ISSN: 0957-0233
PUBLICATION YEAR: 1995
DOCUMENT TYPE: Journal
TREATMENT CODE: Application; Experimental
LANGUAGE: English
AN 1995(20):1114 COMPENDEX
AB A method is described for measuring the specular optical reflectance R(phi) of the interface between a fluid and a glass prism, the incident and reflected light being in the glass, and the angle of incidence phi being varied about the critical angle. Transparent, absorbing and some turbid fluids give R(phi) close to theoretical predictions, and experimental reflectance data are analysed to give the real (n prime) and imaginary (n double prime) refractive indices of the fluid. Other turbid fluids gave R(phi) data that differed strongly from theoretical expectation. This is attributed to heterogeneity of the fluid on the optical wavelength scale, and problems of refractometry for such fluids are discussed.(Author abstract) 12 Refs.

L6 ANSWER 14 OF 33 COMPENDEX COPYRIGHT 2007 EEI on STN
ACCESSION NUMBER: 1995(10):399 COMPENDEX
TITLE: Optical sensor based on total internal reflection diffraction grating.
AUTHOR: Sainov, S. (Bulgarian Acad of Sciences, Sofia, Bulg)
SOURCE: Sensors and Actuators, A: Physical 45 1 Oct 1994.p 1-6
SOURCE: Sensors and Actuators, A: Physical 45 1 Oct 1994.p 1-6
CODEN: SAAPEB ISSN: 0924-4247
PUBLICATION YEAR: 1994
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental

LANGUAGE: English
AN 1995(10):399 COMPENDEX
AB The possibility of using a metal diffraction grating, working in total internal reflection, as an optical sensor is shown. Using the elementary theory of such gratings, the inverse problem is solved in Fraunhofer's approximation and the refractive-index change as a function of the diffraction-efficiency change is determined for small changes of the relative refractive index.The sensitivity of the total internal reflection diffraction grating sensor is much higher for the first diffraction order, provided that the two diffracted beams satisfy the condition for total internal reflection at the prism-investigated medium interface. It is shown that in gratings with large periods and critical angles of the order of 65 degree (quartz-water interface), a change in the refractive index of 5 multiplied by 10 minus 5 can be detected if the diffraction efficiency is measured with an accuracy of plus or minus 1%. Experimentally, a refractive-index change of 3 multiplied by 10 minus 4 has been measured and it is shown that in the vicinity of the critical angle, there is a satisfactory agreement between the experimental results and the elementary theory for s-polarization of the incident wave.(Author abstract) 16 Refs.

L6 ANSWER 15 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2006:9163243 INSPEC
TITLE: Process electronic refractar meter in a compact structure
AUTHOR: Constantin, C. (IPA S.A., Bucharest, Romania)
SOURCE: 2006 IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, 2006, p. 4 pp. of CD-ROM pp., 7 refs.
ISBN: 1 4244 0361 8
Price: 1 4244 0361 8/2006/$20.00
Published by: IEEE, Piscataway, NJ, USA
Conference: 2006 IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, Cluj-Napoca, Romania, 25-28 May 2006
Sponsor(s): IEEE Comput. Soc. - Test Technol. Tech. Council; Tech. Uni. of Cluj-Napoca; IPA - R&D Inst. for Autom., Center for Tech. Transfer Cluj; Uni. of Girona; Romanian Minist. of Educ. and Res.; Romanian Acad. for Tech. Sci.; SRAIT- Romanian Soc. of Autom. and Tech. Informatics
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Practical
COUNTRY: United States
LANGUAGE: English
AN 2006:9163243 INSPEC
AB The use of refracto-metric methods, is largely spread, in many branches of chemical, oil, food, pharmaceutical industry and in biological, chemical and medico-sanitary laboratories. The use of refractometry has also a practical importance in the research of complex systems, like biological products (volatile oils, greases, milk, blood) and many industrial materials (liquid combustible, lubricant oil, glass and rubber). The composition modification of a complex mixture of substances attracts a variation of mixture of the refraction index. The continuous determination of the index value allows the control, during the process, of the composition variation of different materials in the process of their technological conditioning (distillation, extraction, hydrogenation, etc.) The refractive index of a liquid can be measured using an automatic refractometer. The refractometer finds the critical angle of an incident beam of monochromatic light passing through the synthetic sapphire prism into the liquid sample. At the critical angle, no transmitted light enters the liquid so this

refractometer can be used for both transparent and opaque liquids

L6 ANSWER 16 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2006:8832912 INSPEC
TITLE: Comparison of Kretschmann-Raether configuration angular and thickness regimes with phase-difference shift for measuring changes in refractive index
AUTHOR: Kun-Huang Chen; (Dept. of Electr. Eng., Feng Chia Univ., Taichung, Taiwan), Jing-Heng Chen; Jiun-You Lin
SOURCE: Optical Engineering (Feb. 2006), vol.45, no.2, p. 23803-1-5, 16 refs.
CODEN: OPEGAR, ISSN: 0091-3286
SICI: 0091-3286(200602)45:2L.23803:CKRC;1-X
Price: 0091-3286/2006/45(2)/023803-1/5/$22.00
Doc.No.: S0091-3286(06)02502-5
Published by: SPIE, USA
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: United States
LANGUAGE: English
AN 2006:8832912 INSPEC
AB We derive the phase difference equation between the p- and s-polarizations of reflection light based on the Kretschmann-Raether configuration. This phase difference equation is used to examine the relationship of the incident angle and metal film thickness versus the phase differences under a small refractive index variation. For a fixed incident angle, the phase difference has a higher measurement sensitivity than the reflectivity change. At the critical angle, there is a higher sensitivity when the metal film thickness is smaller than the skin depth. The surface plasmon resonant (SPR) angle dominates when the metal film thickness is greater than the skin depth. The phase measuring sensitivity at the SPR angle is higher than that at the critical angle by 1 order

L6 ANSWER 17 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2005:8456867 INSPEC
DOCUMENT NUMBER: A2005-15-0150-003
TITLE: Refractive index measurement using total internal reflection
AUTHOR: Van Keuren, E.R. (Dept. of Phys., Georgetown Univ., Washington, DC, USA)
SOURCE: American Journal of Physics (July 2005), vol.73, no.7, p. 611-14, 9 refs.
CODEN: AJPIAS, ISSN: 0002-9505
SICI: 0002-9505(200507)73:7L.611:RIMU;1-U
Price: 0002-9505/2005/$15.00
Doc.No.: S0002-9505(05)01504-7
Published by: American Assoc. Phys. Teachers through AIP, USA
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2005:8456867 INSPEC DN A2005-15-0150-003
AB An undergraduate level experiment is presented for demonstrating total internal reflection. The experiment yields a relatively precise value of the refractive index of a prism to be found from a measurement of the incident angle at which total internal reflection occurs. Analytic expressions are obtained for the refractive index as a function of the incident angle for both equilateral and right angle prisms. Students can observe not only the critical angle at which total internal reflection occurs, but measure and analyze the significant rise in reflected beam power. The addition of a small fluid reservoir attached to the side of

the prism enables the determination of a liquid refractive index

L6 ANSWER 18 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2001:7053731 INSPEC
DOCUMENT NUMBER: A2001-21-0760H-002; B2001-11-7320P-002
TITLE: Nanofabricated refractive index sensor based on photon tunneling in nanofluidic channel
AUTHOR: Kameoka, J.; Craighead, H.G. (Sch. of Appl. & Eng. Phys., Cornell Univ., Ithaca, NY, USA)
SOURCE: Sensors and Actuators B (Chemical) (10 July 2001), vol.B77, no.3, p. 632-7, 11 refs.
CODEN: SABCEB, ISSN: 0925-4005
SICI: 0925-4005(20010710)B77:3L.632:NRIS;1-L
Price: 0925-4005/2001/$20.00
Doc.No.: S0925-4005(01)00769-9
Published by: Elsevier, Switzerland
DOCUMENT TYPE: Journal
TREATMENT CODE: Application; Practical; Experimental
COUNTRY: Switzerland
LANGUAGE: English
AN 2001:7053731 INSPEC DN A2001-21-0760H-002; B2001-11-7320P-002
AB We have fabricated and tested a refractive index sensor based on photon tunneling in a nanofluidic system. The device comprises an extremely thin fluid chamber formed between two optically transparent layers. It can be used to detect changes in refractive index due to chemical composition changes of a fluid in the small test volume. Because the physical property measured is a refractive index change, no staining or labeling is required. We tested the device with five samples, water and water with 1% ethanol, 2% ethanol, 5% ethanol and 10% ethanol. The sensing was done by measuring the intensity of a reflected laser beam incident on the sensing element at around the critical angle. The measured response agrees well with the calculated reflectance

L6 ANSWER 19 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1999:6353950 INSPEC
DOCUMENT NUMBER: A1999-20-0760H-002
TITLE: Measurement and accuracy analysis of refractive index using a specular reflectivity close to the total internal reflection
AUTHOR: Li Hui; Lu Zukang; (Nat. Key Lab. of Modern Opt. Instrum., Zhejiang Univ., Hangzhou, China), Xie Shusen; Lin Lei
SOURCE: Proceedings of the SPIE - The International Society for Optical Engineering (1998), vol.3558, p. 491-7, 3 refs.
CODEN: PSISDG, ISSN: 0277-786X
SICI: 0277-786X(1998)3558L.491:MAAR;1-O
Price: 0277-786X/98/$10.00
Published by: SPIE-Int. Soc. Opt. Eng, USA
Conference: Automated Optical Inspection for Industry: Theory, Technology, and Applications II, Beijing, China, 16-19 Sept. 1998
Sponsor(s): SPIE; Chinese Opt. Soc.; China Opt. Optoelectron. Manuf. Assoc
DOCUMENT TYPE: Conference; Conference Article; Journal
TREATMENT CODE: Theoretical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 1999:6353950 INSPEC DN A1999-20-0760H-002
AB A new method to measure refractive index and its accuracy analysis is presented. The characteristic includes that the direction of incident light is not perpendicular to the interface but close to

the critical angle of total internal reflection. That the specular reflectivity changes sharply near the critical angle implies that a high measuring sensitivity be reached easily. A narrow p-polarized laser beam and a prism or a quasi-semi-cylindrical lens in contact with a sample are applied in the apparatus. In order to match a high accuracy, a photoelectronic receiver with dual-channel divider is designed to compensate the stability of laser output. One of the advantages of the method is its high accuracy. The uncertainty in the refractive index measurement is in the fourth decimal place at least. The exact direction of incident laser beam depends on the accuracy of result expected. Another outstanding advantage is that it is a particularly straightforward experimental technique. The method is a promising tool to study the response of refractive index to subtle changes of different conditions

L6 ANSWER 20 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1998:5880517 INSPEC
DOCUMENT NUMBER: A1998-10-7870E-003
TITLE: X-ray standing waves in X-ray specular reflection and fluorescence study of nano-films
AUTHOR: Zheludeva, S.I.; Kovalchuk, M.V.; Novikova, N.N.; Sosphenov, A.N.; (Inst. of Crystallogr., Acad. of Sci., Moscow, Russia), Salaschenko, N.N.; Shamov, E.A.; Prokhorov, K.A.; Burattini, E.; Cappuccio, G.
SOURCE: Journal of Applied Crystallography (1 Oct. 1997), vol.30, pt.5, no.2, p. 833-8, 31 refs.
CODEN: JACGAR, ISSN: 0021-8898
SICI: 0021-8898(19971001)30:5:2L.833:SWSR;1-N
Price: 0021-8898/97/$11.50+0.00
Published by: Munksgaard International Booksellers & Publishers, Denmark
Conference: Tenth International Conference on Small-Angle Scattering, Campinas, Brazil, 21-26 July 1996
DOCUMENT TYPE: Conference; Conference Article; Journal
TREATMENT CODE: Experimental
COUNTRY: Denmark
LANGUAGE: English
AN 1998:5880517 INSPEC DN A1998-10-7870E-003
AB The analysis of the wavefield intensity distribution connected with X-ray standing wave (XRSW) generation above the mirror surface at total reflection (TR) is presented for a vacuum/film/substrate sample along with experimental examples for organic and inorganic films for cases where the refractive index of the film is greater than that of the substrate. The thickness of an ultra-thin film may be estimated from the value of the XRSW period formed above the film/substrate interface at TR. In some cases, the thickness of an ultra-thin film may be roughly obtained just from the form of the X-ray reflection curve at incident angles smaller than the critical angle of the substrate. It is demonstrated that interference phenomena at TR, leading to waveguide mode formation inside the layered structure and responsible for a modulation of the X-ray reflection and fluorescence angular dependence, can be used for characterization of nano-films

L6 ANSWER 21 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1997:5648782 INSPEC
DOCUMENT NUMBER: A1997-17-0760H-004
TITLE: Refractive index errors in the critical-angle and the Brewster-angle methods applied to absorbing and heterogeneous materials
AUTHOR: Meeten, G.H. (Schlumberger Cambridge Res., UK)
SOURCE: Measurement Science & Technology (July 1997), vol.8, no.7, p. 728-33, 26 refs.

CODEN: MSTCEP, ISSN: 0957-0233
SICI: 0957-0233(199707)8:7L.728:RIEC;1-7
Price: 0957-0233/97/070720+06$19.50
Published by: IOP Publishing, UK
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical
COUNTRY: United Kingdom
LANGUAGE: English
AN 1997:5648782 INSPEC DN A1997-17-0760H-004
AB High-precision critical-angle refractometers, with automatic refractive index computation and readout, are now available from several manufacturers. In such instruments light is incident from within a transparent reference medium, typically an optical prism, onto a sample material in good optical contact with the prism. The critical angle of reflection is measured at the interface between the prism of known refractive index and the sample material of unknown refractive index. Critical-angle refractometers are calibrated for transparent samples but are commonly used for measurements of refractive index in optically absorbing or optically heterogeneous materials. The instrument will then read an apparent refractive index which differs from the true refractive index of the sample. The optics of the critical-angle refractometer are investigated to quantify errors which arise from the neglect of absorption and heterogeneity in the transparent sample interpretation of the critical angle. Refractive index reading errors will be important when they become larger than the refractive index precision of modern instruments, about 10-5. In critical-angle refractometry it is shown that this occurs for samples of surprisingly weak absorption. The critical -angle and Brewster-angle methods are compared for optically absorbing and heterogeneous samples. Errors arising from sample absorption in the Brewster-angle method are shown to be much less than in the critical-angle method

L6 ANSWER 22 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1995:4963931 INSPEC
DOCUMENT NUMBER: A1995-13-8715M-001
TITLE: Modified critical angle method for measuring the refractive index of bio-optical materials and its application to bacteriorhodopsin
AUTHOR: Wang Song, Q.; Chin-Yu Ku; Chunping Zhang; (Dept. of Electr. & Comput. Eng., Syracuse Univ., NY, USA), Gross, R.B.; Birge, R.R.; Michalak, R.
SOURCE: Journal of the Optical Society of America B (Optical Physics) (May 1995), vol.12, no.5, p. 797-803, 19 refs.
CODEN: JOBPDE, ISSN: 0740-3224
Price: 0740-3224/95/050797-07$06.00
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 1995:4963931 INSPEC DN A1995-13-8715M-001
AB The critical angle technique is modified for the accurate measurement of the refractive index of bio-optical materials. Based on the analysis of reflection from the boundary of the material as a function of incident angle and polarization direction, the critical illumination angle is obtained by numerical differentiation of the reflection curve. As an example, the dispersion curve of bacteriorhodopsin is given. The measurement error and the effect of the host bovine skin gelatin on the results are analyzed

L6 ANSWER 23 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1995:4883797 INSPEC

DOCUMENT NUMBER: A1995-06-0760H-001
TITLE: Refractive index measurement of absorbing and turbid fluids by reflection near the critical angle
AUTHOR: Meeten, G.H.; (Schlumberger Cambridge Res., UK), North, A.N.
SOURCE: Measurement Science & Technology (Feb. 1995), vol.6, no.2, p. 214-21, 12 refs.
CODEN: MSTCEP, ISSN: 0957-0233
Price: 0957-0233/95/020214+08$19.50
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
COUNTRY: United Kingdom
LANGUAGE: English
AN 1995:4883797 INSPEC DN A1995-06-0760H-001
AB A method is described for measuring the specular optical reflectance R(ϕ) of the interface between a fluid and a glass prism, the incident and reflected light being in the glass, and the angle of incidence ϕ being varied about the critical angle . Transparent, absorbing and some turbid fluids give R(ϕ) dose to theoretical predictions, and experimental reflectance data are analysed to give the real (n') and imaginary (n') refractive indices of the fluid. Other turbid fluids gave R(ϕ) data that differed strongly from theoretical expectation. This is attributed to heterogeneity of the fluid on the optical wavelength scale, and problems of refractometry for such fluids are discussed

L6 ANSWER 24 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1994:4809687 INSPEC
DOCUMENT NUMBER: A1994-24-0760H-001; B1994-12-7230-039
TITLE: Optical sensor based on total internal reflection diffraction grating
AUTHOR: Sainov, S. (Central Lab. of Opt. Storage & Process. of Inf., Bulgarian Acad. of Sci., Sofia, Bulgaria)
SOURCE: Sensors and Actuators A (Physical) (Oct. 1994), vol.A45, no.1, p. 1-6, 10 refs.
CODEN: SAAPEB, ISSN: 0924-4247
Price: 0924-4247/94/$07.00
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
COUNTRY: Switzerland
LANGUAGE: English
AN 1994:4809687 INSPEC DN A1994-24-0760H-001; B1994-12-7230-039
AB The possibility of using a metal diffraction grating, working in total internal reflection, as an optical sensor is shown. Using the elementary theory of such gratings, the inverse problem is solved in Fraunhofer's approximation and the refractive-index change as a function of the diffraction-efficiency change is determined for small changes of the relative refractive index. The sensitivity of the total internal reflection diffraction grating sensor is much higher for the first diffraction order, provided that the two diffracted beams satisfy the condition for total internal reflection at the prism-investigated medium interface. It is shown that in gratings with large periods and critical angles of the order of 65° (quartz-water interface), a change in the refractive index of 5+10-5 can be detected if the diffraction efficiency is measured with an accuracy of ±1%. Experimentally, a refractive-index change of 3+10-4 has been measured and it is shown that in the vicinity of the critical angle, there is a satisfactory agreement between the experimental results and the elementary theory for s-polarization of the incident wave

L6 ANSWER 25 OF 33 INSPEC (C) 2007 IET on STN

ACCESSION NUMBER: 1994:4738539 INSPEC
DOCUMENT NUMBER: A1994-19-4280-001
TITLE: Polarization-independent beam splitter based on light reflection by a uniaxial crystal surface, and an immersion method for determining the crystal's principal refractive indices
AUTHOR: Azzam, R.M.A. (Dept. of Electr. Eng., New Orleans Univ., LA, USA)
SOURCE: Journal of Modern Optics (July 1994), vol.41, no.7, p. 1473-8, 10 refs.
CODEN: JMOPEW, ISSN: 0950-0340
Price: 0950-0340/94/$10.00
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical
COUNTRY: United Kingdom
LANGUAGE: English
AN 1994:4738539 INSPEC DN A1994-19-4280-001
AB Light travelling in an isotropic medium of refractive index n and incident on a uniaxial crystal whose optic axis is parallel to the surface and to the plane of incidence is reflected without a change of polarization when n=Ng=(NoNe)1/2, where No and Ne are the crystal's ordinary and extraordinary refractive indices. This is true for all incident polarization states and at all angles of incidence and can be used to design a new polarization-independent beam splitter. For a positive uniaxial crystal (Ne>No), total internal reflection occurs at and above a critical angle equal to arcsin (No/Ne)1/2, so that the incident light beam is deflected without attenuation or change of polarization. When n=Ng the reflectance at normal incidence for unpolarized or circularly polarized incident light is a minimum: Romin=(Na-Ng)/(Na+Ng), where Na=1/2(No+Ne). This suggests a liquid immersion method in which n and Romin determine Ng and Na, hence No and Ne of the crystal

L6 ANSWER 26 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1980:1506192 INSPEC
DOCUMENT NUMBER: A1980-046779
TITLE: Measurement of index of refraction
AUTHOR: Neuberger, J. (Dept. of Phys., Queens Coll., City Univ. of New York, Flushing, NY, USA)
SOURCE: Physics Teacher (Jan. 1980), vol.18, no.1, p. 54; 0 refs.
CODEN: PHTEAH, ISSN: 0031-921X
DOCUMENT TYPE: Journal
TREATMENT CODE: Practical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 1980:1506192 INSPEC DN A1980-046779
AB The path of a laser beam is traced through a glass disc. Simple converging or diverging lenses can be used as targets. The edges of the lenses must be polished. A pencil outline of the disc's position and the direction of travel of the various rays can be drawn, and then the angles can be measured simply with a protractor. Snell's law is used to calculate the refractive index. The critical angle can be measured by using an incident beam at a tangent to the disc. This also illustrates the reversibility of light rays, as the ray emerges at a tangent

L6 ANSWER 27 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1971:283519 INSPEC
DOCUMENT NUMBER: A1971-054077
TITLE: Refractive index and reflectance of the anterior surface of the cornea
AUTHOR: Clark, B.A.J.; Carney, L.G. (Univ. Melbourne, Vic., Australia)

SOURCE: American Journal of Optometry and Archives of American Academy of Optometry (April 1971), vol.48, no.4, p. 333-43, 27 refs.
CODEN: AJOAAX, ISSN: 0002-9408
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: United States
LANGUAGE: English
AN 1971:283519 INSPEC DN A1971-054077
AB A new type of probe devised for the Goldmann applanation tonometer depends for its operation on the difference in critical angles for glass-tear fluid and glass-cornea interfaces. The probe failed to work correctly, and subsequent investigations to determine why were directed at the physical structure of the pre-corneal tear film. Photometry indicated that the anterior surface of the cornea in vivo reflected up to 8% of the incident light, more than seems generally supposed. Calculations of the anterior corneal surface reflectance indicate that two- or three-layer models of the pre-corneal film fit the observations. Slit-lamp observations indicated that the reflectance of the corneal epithelium is much lower than that of the endothelium

L6 ANSWER 28 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1971:210432 INSPEC
DOCUMENT NUMBER: B1971-002785; C1971-000650
TITLE: A new automatic refractometer
AUTHOR: Thevenet, P.
SOURCE: IMEKO V (abstracts), 1970, p. 30-2 of 305 pp.
Published by: IMEKO, Budapest, Hungary
Conference: IMEKO V (abstracts), Versailles, France, 25-30 May 1970
Sponsor(s): IMEKO
DOCUMENT TYPE: Conference; Conference Article
COUNTRY: Hungary
LANGUAGE: English
AN 1971:210432 INSPEC DN B1971-002785; C1971-000650
AB Abstract only given, substantially as follows. The concept utilized in this instrument is that of the critical refraction angle of light rays on the plane diopter, boundary between a known medium-glass-as reference, and a liquid sample the refractive index of which is to be measured, generally to determine the concentration of a chemical product. The refractive index of the latter must be lower than that of the reference medium. In order to increase the contrast of the boundary line, the rays are reflected twice on the plane diopter, under the same incident angle

L6 ANSWER 29 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1968:A31931 INSPEC
DOCUMENT NUMBER: 1968A31931
TITLE: Simultaneous and independent determination of the refractive index and the thickness of thin films by ellipsometry
AUTHOR: Vedam, K.; Rai, R.; Lukes, F.; Srinivasan, R.
SOURCE: Journal of the Optical Society of America (April 1968), vol. 58, no. 4, p. 526-532
DOCUMENT TYPE: Journal
COUNTRY: United States
LANGUAGE: English
AN 1968:A31931 INSPEC DN 1968A31931
AB In ellipsometry, the interesting case of light incident from a dense medium such as an inert liquid onto a film over an absorbing substrate has been considered theoretically for the two cases (i) when the angle of incidence $\phi 0$ is less than the critical

angle ϕc and (ii) when $\phi 0 > \phi c$. Detailed calculations indicate that the sensitivity with which the thickness of the film can be measured is nearly the same, whatever the first medium, for case (i) but that in case (ii) the sensitivity is very poor. Further, by combining the measurements of the ellipticity parameters with first air and then a liquid as the immersion medium, it is possible to evaluate independently by a self-consistency procedure both the thickness and the refractive index of the film. Measurements of oxide films on a substrate of silicon indicate that the refractive index is 1.484 ± 0.004 in the thickness range 80-300 A for λ 5461 A and not 1.460 as has been assumed by previous workers.

L6 ANSWER 30 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1968:A02456 INSPEC
DOCUMENT NUMBER: 1968A02456
TITLE: Optical properties of vacuum-evaporated white tin
AUTHOR: MacRae, R.A.; Arakawa, E.T.; Williams, M.W.
SOURCE: Physical Review (15 Oct. 1967), vol. 162, no. 3, p. 615-620
DOCUMENT TYPE: Journal
COUNTRY: United States
LANGUAGE: English
AN 1968:A02456 INSPEC DN 1968A02456
AB Near-normal incidence-reflectance data on vacuum-evaporated white tin films, produced in situ, are presented for incident photon energies from 2.1 to 14.5 eV. In addition, the real part of the refractive index has been measured from 14.5 to 20.5 eV by the critical-angle method. These results are combined with previously published data for white tin films and an analysis of optical data is carried out from 0.1 to 27.5 eV. Separation of the dielectric constants into contributions due to free and bound electrons indicates interband transitions at 1.2 ± 0.1 and 24.5 ± 0.1 eV, as found by previous workers, and a further interband transition at approximately 3 eV. Tentative identification of these transitions is made using published energy-band calculations. The energy-loss functions for surface and volume plasmons show sharp peaks at 9.2 and 13.4 eV, respectively, in agreement with electron-energy-loss measurements. Sum rules are used to interpret the effective number of electrons per atom at various incident photon energies.

L6 ANSWER 31 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1964:A10146 INSPEC
DOCUMENT NUMBER: 1964A10146
TITLE: Optical constants of metals in the extreme ultraviolet. I. A modified critical-angle technique for measuring the index of refraction of metals in the extreme ultraviolet
AUTHOR: Hunter, W.R.
SOURCE: Journal of the Optical Society of America (Jan. 1964), vol. 54, no. 1, p. 15-19
DOCUMENT TYPE: Journal
COUNTRY: United States
LANGUAGE: English
AN 1964:A10146 INSPEC DN 1964A10146
AB A simple method for measuring the index of refraction, n, of substances that have an index less than unity and a very small extinction coefficient has been developed. It is similar to the usual critical-angle method which measures the index by direct location of the critical angle. The presence of a small amount of absorption makes direct location of the critical angle impossible since it era, ses the discontinuity in the slope of the reflectance versus angle of incidence curve, on which the critical angle method depends. The angle at which the slope of the curve is a maximum very

nearly equals the critical angle, however, so that instead of determining n from the position of a discontinuity in the slope of the reflectance versus angle of incidence curve, it may be obtained from the angle of maximum slope. Four sources of error, which cause the position of maximum slope to shift away from the critical angle, are; large values of k; the presence of an absorbing layer, such as an oxide; interference effects that may be present if the sample to be studied is in the form of a layer on a substrate; and polarization of the incident radiation. The magnitude of the errors arising from these effects are discussed and the method is compared with an interference method.

L6 ANSWER 32 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1964:A05370 INSPEC
DOCUMENT NUMBER: 1964A05370
TITLE: Photorefractometer. II. Measurement of N and K
AUTHOR: Kapany, N.S.; Pontarelli, D.A.
SOURCE: Applied Optics (Oct. 1963), vol. 2, no. 10, p. 1043-1048
DOCUMENT TYPE: Journal
COUNTRY: United States
LANGUAGE: English
AN 1964:A05370 INSPEC DN 1964A05370
AB For Pt I see Abstract 1963A11897. A study is made of the extension of the rod and cone photorefractometer principle to the measurement of N and K, the real and imaginary parts of refractive index of absorbing fluids. Theoretical analysis indicates high sensitivity in the low absorption coefficient region of the specimen when the illumination is incident at the interface at an angle close to the critical angle. Experiments are made on various rod configurations and results agree closely with theory.

L6 ANSWER 33 OF 33 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1964:A00302 INSPEC
DOCUMENT NUMBER: 1964A00302
TITLE: The application to absorbing media, of methods of total internal reflection for the determination of refractive indices
AUTHOR: Dayet, J.; Vincent-Geisse, J.
SOURCE: Comptes Rendus Hebdomadaires des Seances de l'Academie des Sciences (8 July 1963), vol. 257, no. 2, p. 394-397
DOCUMENT TYPE: Journal
COUNTRY: France
LANGUAGE: French
AN 1964:A00302 INSPEC DN 1964A00302
AB Light is incident from a transparent medium onto an absorbing medium of lower refractive index. The formula for the coefficient of reflection is well known but its analytical study is difficult. A computer has been used to determine graphs for various refractive indices and coefficients of absorption. It is shown that provided the absorption is not excessive, the point of inflection, in the graph of the coefficient of reflection and angle of incidence, can be taken as the critical angle and that this leads to very little error in the determination of refractive index.